AMENDMENTS TO THE CLAIMS

For the Examiner's convenience, all pending Claims are set forth below and have been amended where noted:

1. (Currently Amended) A thermally treated carbide material made by the process of the steps comprising:

   a. placing a carbide having a material temperature within a thermal control apparatus comprising a chamber comprising a chamber temperature;

   b. introducing a first cryogenic material into the thermal control apparatus decreasing the material temperature while preventing over-stressing of the carbide, to a first target temperature ranging from ~~-40~~ -120 degrees F and -380 degrees F at a first temperature rate ranging from 0.25 degrees F per minute and 20 degrees F per minute;

   c. stopping the introduction of the cryogenic material into the chamber once the first target temperature is reached for at least two hours;

   d. increasing the chamber temperature to a second target temperature from 0 degrees F and 1400 degrees F;

   e. increasing the material temperature to the second target temperature at a second temperature rate ranging from 0.25 degrees F per minute and 20 degrees F per minute resulting in an intermediate carbide material having an intermediate material temperature and holding that second target temperature for at least fifteen minutes;

   f. introducing a second cryogenic material into the thermal control apparatus decreasing the intermediate material temperature while preventing over-stressing of the intermediate carbide material, to a third target temperature ranging from ~~-40~~ -120 degrees F and -380 degrees F at a third temperature rate ranging from 0.25 degrees F per minute and 20 degrees F per minute;

g. stopping the introduction of the second cryogenic material into the chamber once the third target temperature is reached for at least two hours;

h. increasing the chamber temperature to a fourth target temperature from 0 degrees F and 1400 degrees F; ~~and~~

i. increasing the intermediate material temperature to the fourth target temperature at a fourth temperature rate ranging from 0.25 degrees F per minute and 20 degrees F per minute and holding that second target temperature for at least fifteen minutes; and

j. repeating the steps of decreasing the material temperature, stopping and holding the introduction of the cryogenic material, and increasing the chamber temperature at least two times consecutively resulting in treated carbide without fractures.

2. (Original) The material of claim 1, wherein the carbide is a carbide of heavy metals forming a hard material.

3. (Original) The material of claim 2, wherein the carbide is selected from the group consisting of a titanium, a scandium, a vanadium, a chromium, a manganese, an iron, a cobalt, a molybdenum, a tungsten, a niobium, a tantalum, a silicon, and combinations thereof.

4. (Original) The material of claim 3, wherein the carbide is a powder or made from a powder.

5. (Original) The material of claim 2, wherein the carbide of heavy metals is a sintered, compacted, or cemented mixture.

6. (Original) The material of claim 2, wherein the carbide is a precipitate within an iron alloy.

7. (Original) The material of claim 1, wherein the first temperature rate is different from the second temperature rate to create a desired metallurgical characteristic in the treated carbide, wherein the characteristic is selected from the group consisting of wear-resistance, impact resistance, ductility, hardness, strength and combinations thereof.

8. (Original) The material of claim 1, wherein the carbide is treated using a first temperature rate substantially the same as the second temperature rate.

9. (Original) The material of claim 1, wherein the intermediate carbide material is treated further using the steps of:

   a. introducing a third cryogenic material into the thermal control apparatus to decrease the intermediate carbide material temperature and while preventing over-stressing of the intermediate carbide material, to a fifth target temperature ranging from -40 degrees F and -380 degrees F at a fifth temperature rate ranging from 0.25 degrees F per minute and 20 degrees F per minute;

   b. stopping the introduction of the third cryogenic material into the chamber once the fifth target temperature is reached;

   c. increasing the chamber temperature to a sixth target temperature from 0 degrees F and 1400 degrees F; and

   d. increasing the intermediate carbide material temperature to the sixth target temperature at a sixth temperature rate ranging from 0.25 degrees F per minute and 20 degrees F per minute resulting in treated carbide without fractures.

10. (Original) The material of claim 1, further comprising the step of permitting the carbide to soak at the first target temperature for a first period of time.

11. (Original) The material of claim 10, wherein the first period of time ranges from 15 minutes to 96 hours.

12. (Original) The material of claim 1, further comprising the step of permitting the carbide to soak at the second target temperature for a second period of time.

13. (Original) The material of claim 12, wherein the second period of time ranges from 15 minutes to up to 48 hours.

14. (Original) The material of claim 1, wherein the thermal control apparatus further comprises a heat exchanger disposed in the tank to provide a cryogenic vapor to the tank.

15. (Original) The material of claim 14, wherein the cryogenic material is released into the heat exchanger thereby absorbing heat from the tank into the heat exchanger forming a cryogenic vapor that fills the tank.

16. (Original) The material of claim 15, wherein the cryogenic vapor is a member of the group consisting of hydrogen, nitrogen, oxygen, helium, argon, and combinations thereof.

17. (Original) The material of claim 1, wherein the first temperature rate, the second temperature rate, the third temperature rate and the fourth temperature rate are determined by the mass of the carbide.

18. (Original) The material of claim 1, wherein the carbide is a laminate.

19. (Original) The material of claim 1, wherein the carbide has a crystalline structure.

20. (Original) The material of claim 1, wherein the carbide is bonded to a second material.

21. (Original) The material of claim 20, wherein the second material is selected from the group consisting of an iron, an iron alloy, a copper, a copper alloy, a diamond, a cermet, and combinations thereof.

22. (Original) The material of claim 18, wherein the laminate is a carbide disposed on a member of the group consisting of a ceramic, a wood, a polymer, and combination thereof.

23. (Original) The material of claim 1, wherein the carbide is an inclusion in a third matrix material.

24. (Original) The material of claim 23, wherein the third matrix material is a member of the group consisting of an iron, an iron alloy, a copper, a copper alloy, a ceramet, a powdered sintered metals, and combinations thereof.

25. (Original) The material of claim 1, wherein the carbide is a coating.

Applicant believes that no new matter has been added with these amendments.